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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/548,946	04/13/2000	Maria Cristina B. Estacio	18865-004500US	6946

20350 7590 02/18/2003

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EXAMINER

PAREKH, NITIN

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 02/18/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/548,946

Applicant(s)

ESTACIO ET AL.

Examiner

Nitin Parekh

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 December 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5 and 6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5 and 6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Art Unit: 2811

DETAILED ACTION

Request for Continued Examination

1. A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/09/02 has been entered. An action on the RCE follows.

2. The amendment filed on 12/09/02 has been entered.

Drawings

3. The formal drawings filed on 04-13-2000 are acceptable.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2811

5. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crowley et al (US Pat. 6459147) in view of Williams et al (US Pat. 6307755) and Temple et al (US Pat. 5103290).

Regarding claim 5, Crowley et al disclose a chip device comprising:

- a lead frame (116 in Fig. 3 and 4) having source, gate and drain connections (1-3, 4 and 5-8 respectively in Fig. 3)
- a separate lead rail adjacent the die frame (not numerically referenced in Fig. 3 - see the rail portion of 116 on the left side connecting the leads 1, 2 and 3), the lead rail comprising a plurality of leads (1, 2 and 3 in Fig. 3) and a recess/groove (140 in Fig. 3 and 4)
- a die (114 in Fig. 2; Col. 4, line 5- Col. 7, line 5) having connections/terminals on a front side and backside (Fig. 4), the die being attached/bonded to the lead frame to provide electrical connections to the respective connections/terminals
- a copper strap/clip (112 in Fig. 3 and 4; Col. 3, line 52) attached to a front side of the die such that the strap the source region of the die and the recess/groove (Fig. 4; Col. 3, line 42), wherein
- the lead rail and leadframe are oriented such that their respective plurality of leads extend (1-3 and 5-8 respectively in Fig. 3) in opposing directions.

(Fig. 3 and 4; Col. 3, line 25-Col. 4, line 56).

Art Unit: 2811

Crowley et al fail to specify:

- a) the die being bumped and having solder bump connections, and
- b) the copper clip/strap and drain regions of the die being on the backside of the die such that the copper strap connects the drain regions of the die and the lead rail.

a) Temple et al teach using a die having solder bump connections (30/44 in Fig. 2-7; Col. 5, line 38- Col. 7, line 3).

b) Williams et al teach using a leadframe/MOSFET device having terminal/pad configuration comprising source, drain and gate connections (444, 448 and 446 respectively in Fig. 18F and 18G; Col. 11, line 10-60; Fig. 12A) where a drain region is configured on a backside of the die. Williams et al further teach providing an electrical connection to the backside of the die to the respective drain connections through a lead rail portion on the backside (448 in Fig. 18F).

Therefore, it would have been obvious to a person of ordinary skill the art at the time invention was made to incorporate a the die being bumped and having solder bump connections as taught by Temple et al and the copper clip being attached on the backside of the die connecting the drain regions and lead rail as taught by Williams et al so that rework capability on the top side of the die and integrity of bump connections can be improved in Crowley et al et al's device.

Art Unit: 2811

Regarding claim 6, Crowley et al further disclose the copper strap/clip being attached to the die with solder paste (136 in Fig. 4; Col. 3, line 64).

Response to Arguments

6. Applicant's arguments with respect to claims 5 and 6 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Reference C is cited as being related to leadframe device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nitin Parekh whose telephone number is 703-305-3410. The examiner can normally be reached on 09:00AM-05:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 703-308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722, 703-308-7724 or 703-872-9318 (Right FAX) for regular communications; 703-872-9310 (Right FAX) for After Final communications and 703-872-9310 (Right FAX) for customer service.

Art Unit: 2811

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.

Nitin Parekh

NP
02-11-03



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